

CLAIMS

Having thus described the aforementioned invention, we claim:

1. A tower attached to a vehicle, such as a marine vessel, said tower comprising:

5 a first strut held in fixed relation to the vehicle;

a second strut having a first end and a second end;

a hinge assembly pivotably connecting said first strut to said second strut, said hinge assembly including

a first member attached to said first strut;

10 a second member attached to said first end of said second strut, said second member pivotably connected to said first member;

an operator locking said first member to said second member in a locked position, said operator held captive in said hinge assembly;

15 a releasable footer for securing said second end of said second strut, said releasable footer including

a body held in fixed relation to the vehicle, said body having a first opening;

a footer bolt movable within said body, said footer bolt movable between a retracted position and an extended position;

20 a releasable member adapted to be received by said first opening in said body, said releasable member having an opening adapted to receive said footer bolt when said releasable member is received by said first opening and said footer bolt is in said extended position;

25 whereby said tower folds when said second strut is released and said hinge assembly is unlocked.

2. The apparatus of Claim 1 further including a lip extending from said first member and a slot formed in said second member, said lip engaging said slot when said first member and said second member are in a locked position.

3. The apparatus of Claim 2 further including a lip extending from said second member and a slot formed in said first member, said lip engaging said slot when said first member and said second member are in said locked position.

4. The tower of Claim 1 wherein said operator includes at least one locking pin held in fixed relation to said second member, said at least one locking pin engaging at least one corresponding opening in said first member, thereby locking said first member and second member in said locked position.

5. The tower of Claim 4 wherein said operator further includes a spring cooperating with said at least one locking pin whereby said spring forces said at least one locking pin to engage said at least one corresponding opening.

6. The tower of Claim 4 wherein said operator further includes a pushbutton connected to said at least one locking pin, said pushbutton causing said at least one locking pin to disengage said at least one corresponding opening.

7. The tower of Claim 4 wherein said operator further includes means for moving said at least one locking pin between a retracted position and an extended position.

8. The tower of Claim 1 wherein said operator includes a hinge bolt slideably engaging an opening in said first member in a fixed position.

9. The tower of Claim 8 further including a chamfer on said first member adjacent said opening in said first member; said chamfer adapted to slideably engage said exposed end of said bolt whereby said bolt is pushed into an

opening of said second member as said first member and said second member are aligned in a locked position.

10. The tower of Claim 8 wherein said operator further includes a spring cooperating with said hinge bolt whereby said spring forces said hinge bolt to extend between said first member and said second member.

11. The tower of Claim 8 wherein said operator further includes a sliding operator connected to said hinge bolt whereby said sliding operator causes said hinge bolt to move between a retracted position and an extended position.

12. The tower of Claim 8 wherein said operator further includes means for moving said hinge bolt between a retracted position and an extended position.

13. The tower of Claim 1 further including a second operator locking said first member to said second member in said locked position, said second operator held captive in said hinge assembly.

14. The tower of Claim 1 further including a spring cooperating with said footer bolt whereby said spring forces said footer bolt to extend into said opening in said releasable member.

15. The tower of Claim 1 further including means for moving said footer bolt between a retracted position and an extended position.

16. A tower attached to a vehicle, such as a marine vessel, said tower having an erect position and a folded position, said tower comprising:

a means for releasably securing one end of said tower to the vehicle;

a means for pivoting said tower between said erect position and said folded position;

a means for locking said means for pivoting in a fixed position when said tower is in said erect position; and

a means for operating said means for locking.

17. An apparatus for folding a tower attached to a vehicle, such as a
5 marine vessel, said apparatus comprising:

a first member attached to a first strut of the tower;

a second member attached to a second strut of the tower;

a means for pivoting said first member about said second member;

a means for locking said first member to said second member wherein said
10 first strut is held in a fixed position relative to said second strut; and

a means for operating said means for locking.

18. The tower of Claim 16 wherein said means for releasably securing includes a releasable footer having a body, a spring loaded bolt, and a releasable member secured by said spring loaded bolt.

15 19. The tower of Claim 16 wherein said means for pivoting includes a first member pivotably connected to a second member, said first member and said second member having a locked position wherein a spring loaded bolt in said first member engages an opening in said second member.

20 20. The tower of Claim 16 wherein said means for pivoting includes a first member pivotably connected to a second member, said first member and said second member having a locked position wherein a spring loaded locking pin in said second member engages an opening in said first member.

21. An apparatus for folding a tower attached to a vehicle, such as a marine vessel, said apparatus comprising:

a first member having a first longitudinal axis and an opening;

5 a bolt extendable from a first end of said first member, said bolt having a first end disposed inside said opening in said first member and an exposed end, said bolt slideably engaging said opening in said first member, said bolt movable between a retracted position and an extended position, said bolt held captive in said apparatus;

10 a second member having a second longitudinal axis, said second member having an opening adapted to receive said exposed end of said bolt; and

a pivot joining said first member to said second member, said first member and said second member being movable between a locked position and an unlocked position, when said first member and said second member are in said locked position, said exposed end of said bolt engages said opening of said second member and said first longitudinal axis is substantially parallel to said second longitudinal axis, when said first member and said second member are in said unlocked position, said first member pivots relative to said second member about said pivot.

22. The apparatus of Claim 21 further including an operator attached to said bolt whereby said operator causes said bolt to slideably move within said opening of said first member.

23. The apparatus of Claim 21 further including a spring disposed in said opening of said first member, said spring engaging said first end of said bolt.

24. The apparatus of Claim 21 further including a means for moving said bolt between said retracted position and said extended position.

25. The apparatus of Claim 21 further including a lip extending from said first member and a slot formed in said second member, said lip engaging said slot when said first member and said second member are in said locked position.

26. The apparatus of Claim 25 further including a lip extending from said second member and a slot formed in said first member, said lip engaging said slot when said first member and said second member are in said locked position.

27. The apparatus of Claim 21 further including a second bolt extendable from a first end of said second member, said second bolt having a first end disposed inside an opening in said second member and an exposed end, said bolt slideably engaging said opening in said second member; said first member having an opening adapted to receive said exposed end of said second bolt.

28. The apparatus of Claim 21 further including a chamfer on said first member adjacent said first opening of said second member; said chamfer adapted to slideably engage said exposed end of said bolt whereby said bolt is pushed into said opening of said first member as said first member and said second member are aligned for said locked position.

29. An apparatus for folding a tower attached to a vehicle, such as a marine vessel, said apparatus comprising:

a first member having a first longitudinal axis, a first opening, and a second opening, said first member having a lip and a slot;

a second member having a second longitudinal axis, a first opening, and a second opening, said second member having a lip and a slot;

a first bolt extendable from a first end of said first member, said first bolt having a first end disposed inside said first opening in said first member and an exposed end, said first bolt slideably engaging said first opening in said first

member, said exposed end of said first bolt engaging said second opening in said second member;

a first operator attached to said first bolt whereby said first operator causes said first bolt to slideably move within said first opening of said first member;

5 a first spring disposed in said first opening of said first member, said first spring engaging said first end of said first bolt;

a second bolt extendable from a first end of said second member, said second bolt having a first end disposed inside said first opening in said second member and an exposed end, said second bolt slideably engaging said first opening
10 in said second member, said exposed end of said first bolt engaging said second opening in said first member;

a second operator attached to said second bolt whereby said second operator causes said second bolt to slideably move within said first opening of said second member;

15 a second spring disposed in said first opening of said second member, said second spring engaging said first end of said second bolt; and

a pivot joining said first member to said second member, said first member and said second member being movable between a locked position and an unlocked position,

20 when said first member and said second member are in said locked position, said exposed end of said first bolt engages said second opening of said second member, said exposed end of said second bolt engages said second opening of said first member, said lip of first member engages said slot of said second member, said lip of second member engages said slot of said first member, and said first
25 longitudinal axis is substantially parallel to said second longitudinal axis,

when said first member and said second member are in said unlocked position, said first member pivots relative to said second member about said pivot.

30. An apparatus for folding a tower attached to a vehicle, such as a marine vessel, said apparatus comprising:

a locking assembly having a shaft and at least one locking pin substantially parallel to said shaft;

5 a lock plate having a shaft with an opening adapted to slidably receive said locking assembly shaft, said lock plate shaft substantially perpendicular to a lock plate flange;

a pushbutton attached to said locking assembly shaft;

10 a first member having a first longitudinal axis, said first member having a first opening adapted to receive said pushbutton and a second opening adapted to receive said shaft of said lock plate whereby said shaft of said lock plate is rotatable within said second opening, said first opening axially aligned with said second opening, said first member having at least one third opening adapted to receive said at least one locking pin;

15 a second member having a second longitudinal axis, said second member having a first opening adapted to slidably receive said locking assembly and a second opening adapted to receive and secure said lock plate flange; and

20 a spring positioned between said pushbutton and said second opening in said first member whereby said spring forces said pushbutton away from said second opening in said first member and forces said at least one locking pin to engage at least one third opening in said first member, thereby locking said first member to said second member.

31. The apparatus of Claim 30 further including a lip extending from said first member and a slot formed in said second member, said lip engaging said slot
25 when said first member and said second member are locked together.

32. The apparatus of Claim 31 further including a lip extending from said second member and a slot formed in said first member, said lip engaging said slot when said first member and said second member are locked together.

33. An apparatus for attaching a tower to a vehicle, such as a marine
5 vessel, said apparatus comprising:

a body held in fixed relation to the vehicle, said body having a first opening and a second opening, said first opening substantially perpendicular to said second opening;

10 a footer bolt movable within said second opening in said body, said footer bolt movable between a retracted position and an extended position, said footer bolt held captive in said body;

a releasable member adapted to be received by said first opening in said body, said releasable member having an opening adapted to receive said footer bolt when said releasable member is received by said first opening and said footer bolt
15 is in said extended position.

34. The releasable footer of Claim 33 further including a spring disposed in said second opening, said spring acting on said footer bolt to force said footer bolt into said extended position.

35. The releasable footer of Claim 33 further including a means for
20 moving said footer bolt between said retracted position and said extended position.

36. An apparatus for attaching a tower to a vehicle, such as a marine vessel, said apparatus comprising:

a means for releasably securing a portion of the tower to the vehicle;

a means for locking said means for releasably securing; and

25 a means for operating said means for locking.